

# E-learning adoption in universities: the ‘gazebo’ effect of the social system on diffusion

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**Abstract:** The implementation of e-learning in universities is often explored through the conceptual framework of the innovation diffusion model (Rogers 2003). Analysis using the five adopter categories or the characteristics of the innovation is common, but a less frequently explored element is the influence on diffusion of the social system within which the individual adopters are situated. The paper considers the potential of this element of Rogers’ model to explain the diffusion of e-learning within the social system of a university and demonstrates that the nature of universities, traditionally considered to be highly decentralized organizations composed of many ‘ivory gazebos’ rather than a single ‘ivory tower’, may expose some challenges to the usefulness of the model. Factors considered include the ambiguity of management positions and the nature of communication in devolved departments.

## Introduction

The implementation of e-learning within universities is often explored through a conceptual framework informed by Rogers’ model of innovation adoption and diffusion (Rogers 2003). In these studies the most frequently cited elements of the model are the five adopter categories, (innovators, early adopters, early and late majority and laggards) (for example: Zayim et al. 2006) and the five characteristics of the innovation; relative advantage, compatibility, complexity, trialability and observability. It is less common to find reference to the role of the social system in adoption and diffusion and yet the nature of universities as organizations poses considerable challenges for those managing change associated with the expansion of e-learning. This paper presents the outcomes of research (Hanson 2008) that used the conceptual framework of innovation diffusion to explore the process of change management associated with the introduction of e-learning innovation in a university. It demonstrates how the complexity of the traditional university organization may pose some challenges to the applicability of the diffusion framework in explaining adoption and diffusion under these circumstances. Using a qualitative methodology for the investigation, the research was written up as a single-site case study. The site for the research was a medium sized UK university that was moving from a process of encouraging gradual incremental adoption of e-learning to a more strategic approach that required greater managerial intervention. The primary means of collecting data were semi-structured interviews with senior university executives, academic ‘middle’ managers and academic faculty.

## Context for the case study

The university began to explore the use of e-learning within its campus-based courses using an incremental strategy of encouraging innovators and early adopters. To promote interest and foster adoption the innovations were recognizable changes congruent with existing approaches to teaching, so emphasis was placed on developing online content in place of lectures, using asynchronous discussion fora in place of seminars and creating formative assessment tests. Separate applications for each of these functions were used which were eventually merged to create an in-house virtual learning environment (VLE). This approach encouraged a diversity of adoption levels across the six decentralized academic departments. The in-house VLE was re-invented in different departments to meet the local needs of the innovators, some of which were recognized as highly innovative by other members of their discipline-based academic communities outside the university. Eventually the sustainability of supporting multiple versions of the in-house VLE was challenged and a proposal was made to senior managers to establish one standard VLE across the university. Managing the adoption and diffusion process more strategically thus became necessary. It was the challenge of implementing a strategic technological change in a devolved organization that led me to explore theories associated with the adoption and diffusion of innovation as identified by Rogers (2003) to inform the conceptual framework for this research. Rogers’ model appeared to offer a framework for exploring the

inherent tension arising between the need to impose a managerial decision to adopt a technology at the organizational level and the need to accommodate a bottom-up, incremental approach to change management required by the collegial nature of the university's culture. The findings of this study illuminate the applicability of Rogers' model of diffusion in a devolved university which places a premium on collegial networks. The decentralized nature of the university, the autonomy of potential adopters and the influence of these factors on managerial actions, are shown to have both positive and negative influences on innovation diffusion. Factors considered included the ambiguity of management positions in the case of both senior and middle managers, social networks in devolved departments and the role of innovation champions. Before exploring these issues, the paper continues with a review of the organizational complexity of universities.

## **Universities as complex organizations**

Universities have traditionally been regarded as autonomous, self-regulating organizations, giving rise to the popular view of their remoteness from everyday affairs expressed through the term 'ivory tower'. They have also been described as Tayloristic (Greenwood and Levin 2001) and collegial (Keup et al. 2001). Their highly devolved internal structures and processes may be "loosely coupled" (Weick 1976) or even anarchic (McNay 1995). Loosely coupled systems are characterized by loose definition of policy and loose control over policy implementation (Weick 1976). These characteristics make them highly amenable to 'localized adaptation' of policy where policies originating from senior management are subjected to change as they filter down through the academic departments (Trowler and Knight 2002). This decentralised nature may result from the fragmentation of knowledge and the growth of separate disciplines around which most university structures are organized (Awbry and Awbry 2001). So, far from being ivory towers, universities could be characterized as "congeries of little ivory gazebos, generally run as professional disciplinary conclaves whose control over their intellectual agendas is jealously defended" (Greenwood and Levin 2001: 436). Universities are also characterized by a unique value system, the concept of 'academic freedom' (Birnbaum 1988; Karran 2009), that has traditionally afforded faculty considerable autonomy over their own work. These departmental 'ivory gazebos' may suggest that a university should align with the characteristics of a decentralized organization in the diffusion model but when added to the other organizational characteristics of the university such as collegial decision-making and the autonomous self-regulation of its workforce, some differences can be observed, as reported later in this study.

## **Elements of innovation adoption and diffusion**

Rogers' (2003) model emphasizes four key elements of the diffusion process, the innovation itself, the communication channels through which information about the innovation is disseminated, the length of time it takes for individuals to decide to adopt, and the social system within which the individual adopters are located (Rogers 2003). From these elements arise the aspects that are most frequently the subject of research. The innovation itself is attributed with five characteristics that affect its adoption; relative advantage, compatibility, complexity, trialability and observability. The communication channels include mass media and interpersonal channels, or networks, between individuals. The length of time it takes potential adopters to make the decision to adopt leads to the definition of categories of adopters depending on their degree of innovativeness. The names of these categories are familiar as innovators, early adopters, early majority, late majority and laggards. Finally, the nature of the social system affects diffusion through its communication channels and its norms of behavior, including the extent to which individuals can influence the behavior of other members of the system. It is this latter aspect of the innovation diffusion model that is the subject of this paper.

## **Innovation diffusion in organizations**

Innovation diffusion in organizations is a more complex process than that observed through adoption by individuals (Rogers 2003:403). In studying the process of adoption and diffusion of an innovation within an organization, it has been found that, in addition to the perceived attributes of the innovation, other dimensions including the decision-making processes within the organization and a five-stage adoption process shape the progress of implementation as much as the four elements noted above. Within these dimensions certain organizational variables have an impact, such as the extent to which the organization is centralized or decentralized, the leadership styles of those involved in supporting and implementing the innovation and the social networks through which information about the innovation is disseminated (Rogers 2003). In decentralized organizations the

cycle of innovation adoption and diffusion is likely to be very closely geared to meeting local needs in response to specific problems. Decisions about adoption are made locally and a high degree of local adaptation, or re-invention, of the innovation takes place. However, given Rogers' definition of an organization, as "a stable system of individuals who work together to achieve common goals through a hierarchy of ranks and division of labor" (Rogers 2003:404), when considering diffusion in universities the possibility of observing a challenge to the traditional cycle of innovation diffusion might be anticipated. This definition is very much at variance with the traditional conception of the university noted above, with its collection of departmental 'ivory gazebos', a collegial structure designed to protect academic judgment and a labor force dedicated to the exercise of professional autonomy (Bargh et al. 2000: 153). The likelihood of these factors challenging the model becomes apparent on examination of the potential for university managers to act as innovation champions, the nature of social networks in devolved university departments and the role of opinion leaders. These factors will be reviewed in the following paragraphs.

## **Role of senior managers**

The innovation diffusion model emphasizes the importance of securing overt support from top management for successful adoption and diffusion of an innovation within an organization, especially for costly, highly visible innovations (Rogers 2003) such as IT innovations or e-learning (Lisewski 2004; Rossiter 2006). The positive attitude of a senior manager towards an innovation is reported to be more important than many other factors in the diffusion framework (Damanpour and Schneider 2006). For this study, two members of the university's senior executive team of four were interviewed, one was responsible for the overall strategic direction of the university and the other was responsible for the university's learning and teaching strategy including e-learning. The aim of each interview was to explore the likelihood of them acting as innovation champions through reviewing their perceptions of the ways in which e-learning might be taken forward strategically and the extent to which they would consider taking direct managerial action with heads of department to introduce e-learning into their departments. Their responses revealed a strong tension between their desire to take a direct managerial approach and a perceived need to act in a collegial manner. They recognized that change in the university was difficult to implement "actually making things change on the ground is probably not as easily implementable as one would hope" (Respondent A). They also recognized that the approach of making small, incremental changes in the use of technologies for learning would eventually have to be challenged "it is difficult, but it is something we absolutely have to do something about. We are going to come a point where we cannot just say we don't know what we are going to need so we can't do anything, or we are just going to try doing this little bit." (Respondent A).

A principal inhibitor to acting as a champion for e-learning innovation appeared to be the risk aversion exhibited by both respondents. There was little enthusiasm from either for the risk-taking and commitment that is necessary to make significant changes in e-learning implementation (Rossiter 2006), nor support for a more directed approach to managing change that would be needed to standardize on one e-learning platform across the university. They appeared to be willing to support action that could be demonstrated to "work" or where the outcome was certain "I think it's the old problem, you can probably take the horse to water... I am sure what we did was right, because we had to get those that were interested [in e-learning] into being committed. The question is, whether now is the right time to change. Yes, I would like to, but we could only do that if it's going to work." (Respondent A). Yet they also stressed the need to gain wider consensus "I think the operationalisation of the whole of the strategy requires a buy-in across the university and a lot of joining up, and that is what is difficult" (Respondent B).

It has been suggested that a collegial style of management for universities is appropriate because it is "the most effective method of achieving success in the core business" (Shattock 2003:88) and that managerial styles that do not involve academics in decision making will not engender the trust necessary for the effective working of the university. However, too much consensus-seeking and long periods of incremental change can lead to stagnation in the organization's performance (Summerville 2005) and organizations that have sustained an incremental approach to change for a long period frequently needed a radical shock to make transformative changes to turn around their performance (Stace 1996). It seemed that these senior executives had realized that this was the position reached by the university at this time, but they were still reluctant to take decisive action to achieve change. The tension caused by a desire to implement innovation and recognition of the need to maintain a collegial style of management and consultation, a key role for chief executives in universities (Bargh et al. 2000), was very evident in this case. Since these senior executives appeared ambivalent in their attitude towards action as innovation champions for e-learning, consideration was given next to the position of 'middle managers' of the university, the heads of department.

## **The capacity of middle managers to influence innovation diffusion**

The diffusion framework suggests that innovation champions need not always be senior managers and that they can emerge from among middle managers. However, it has also been identified that those at the meso-level between the organization and the individual, who are responsible for implementing policy through management action, frequently adopt a more collegial approach with those they manage. This can lead to a significant gap between the original policy intention and its actual implementation that is unforeseen by the senior executive from whom the policy originated (Holt and Challis 2007). Furthermore, the middle managers can still take this approach, even if they recognize that this practice is actually inhibiting innovation (Salaman and Storey 2002). This suggests that in the collegial culture of the university organization forces are at work that may actually cause these middle managers to distort the progress of innovation diffusion.

The middle managers in this study were five academic heads of department. These were faculty who had been appointed to senior posts to provide academic leadership in their discipline and were responsible for the line management of other academics. They were expected to bring about change by using management tools such as appraisal and performance management. The focus for these interviews was an exploration of their potential to act as innovation champions for e-learning and their appetite for decisive managerial action. It became evident that although these middle managers were trying hard to accommodate managerial approaches, such as introducing a more formal annual appraisal process, they were failing to follow through with actions that would support more widespread adoption and diffusion of e-learning. They described the approach used for appraisals “I have an initial meeting with staff in the autumn term and then again in March/April, using the form to discuss goals relating to teaching, research, business development and professional knowledge” (Respondent C). But then they admitted that linking appraisal objectives to strategic targets was not robust as it might be “Duties have been allocated in a rather lightweight approach to appraisal” (Respondent D).

Their responses also suggested that the process was not as managed as it appeared on the surface and actually contained a significant underlying factor that appeared to be distorting the appraisal process as a vehicle for encouraging academics to adopt more innovative approaches to teaching such as e-learning. The principal aim of undertaking appraisals appeared to be the identification of specific teaching duties and ‘contact hours’, rather than identifying opportunities to enhance student learning or to develop innovative approaches to teaching. This approach seemed to be driven by administrators who were responsible for completing timetables and ensuring the full utilization of each academic’s allocated ‘contact hours’ “The issue at appraisal is one of seeing how an individual’s 18 hours are used. I would love to be able to give two hours for learning and teaching developments to committed staff but the resourcing model will not allow this” (Respondent F). The implication of this drive to fill timetables suggests that there was little time left for reflection on teaching or the exploration of new ideas that might lead to the adoption of innovative approaches to teaching “Staff in have on average 16 hours per week and every research student is up to their 6 hours per week, so there is very little slack in the system” (Respondent D). Rather than perceiving the appraisal as an opportunity to encourage faculty to adopt e-learning as a way of helping them address a high teaching load, encouraging them to engage with innovation was perceived to be adding to their burden “The responsibility for engaging staff with it [e-learning] starts with yourself, but you are loath to add something extra to an already loaded timetable” (Respondent G).

Although reinvention of policy by those lower down in the hierarchy is an important feature in innovation diffusion within an organization (Rogers 2003; Holt and Challis 2007) it appeared to be a counteracting force in this case. For the academic managers, it is more comfortable to continue having discussions in appraisals about timetabled hours and how they were going to be filled, rather than address the more uncomfortable topic of changing approaches to teaching. This accords with the view that university middle managers may appear to be “chameleonlike”, presenting to senior managers their compliance with managerialist approaches but offering to their colleagues a more sympathetic consideration of the pressures that threaten core academic values “to achieve an imperialising discourse, chameleonlike the middle manager may adopt the discourse of managerialism, or the discourse of representing core organizational values” (Clegg and McAuley 2005:5). This inability or unwillingness of managers at both senior and middle levels to act as innovation champion to encourage adoption in this decentralized organization is an indication that assumptions about this role in the innovation diffusion framework may need amending.

## Social networks and opinion leaders in devolved organizations

Since innovation champions may not be found in a collegial organization among the senior or middle managers for reasons identified earlier, consideration should be given to the influence of potential adopters' social networks in enhancing diffusion and the role of opinion leaders within those networks. Interviews with fourteen members of faculty, drawn mostly from the early and late majority categories of innovators, investigated perceptions of the barriers and enablers to adopting e-learning, including their access to information about e-learning from those whom they considered to be knowledgeable about it. A significant finding in this case was their isolation from colleagues, heightened by the heavy teaching load identified earlier "People laugh at me when I say this, but I have never been in such an isolating job in my whole life, you know, it's so isolating. You don't talk to your colleagues except in the corridor because you are in the lecture or classroom with your students, so all that informal and formal networking doesn't seem to occur" (Respondent H). They did not readily have contact with their colleagues to hear about innovations unless they took part in more formally arranged processes such as teaching observations "We don't hear an awful lot about what other people are doing. We are just about to come up to peer review and that gives you a chance to see what other people are doing" (Respondent I). This isolation from their academic colleagues suggests that the role of social networks may be negligible in diffusing innovation in a devolved university organization composed of departmental 'ivory gazebos'. Individual opinion leaders referred to by respondents were often e-learning innovators who had acquired their influence and recognition as opinion leaders through their adaptations of the in-house VLE to suit their own departmental needs. In this way they did indeed "exemplify and express the system's structures" (Rogers 2003:27) as they had gained status as a result of the devolved structure of the university. However, when the proposal to adopt a standard VLE across the university was made, it was perceived as a threat to the position of these opinion leaders in their departments so they opposed the innovation to demonstrate to members of their social system that they had not deviated from its norms.

## Conclusions: Implications for the diffusion model

An incremental approach to developing e-learning focused on an in-house VLE that facilitated local adaptations within the devolved university departments did encourage diffusion. However, when the organizational strategy for e-learning required a change of direction towards a more centralized approach using one standardized VLE platform, it was found that the local adaptation had fostered extremely strong departmental identities, particularly among opinion leaders, that threatened to act as a barrier to further innovation adoption. This partially confirms the applicability of the innovation diffusion framework as applied to innovation in organizations, since diffusion of innovation can be encouraged through local adaptations of the innovation. However the organizational characteristics of a university can also inhibit innovation since the management structures may restrict the emergence of innovation champions. Senior executives appeared constrained by a need to act according to traditional collegial norms and were averse to risk-taking, even if frustrated by the subsequent slow rate of change. Academic heads of department, the 'middle managers', were also finding their preference for exercising academic collegiality compromised by an expectation to adopt managerial approaches. They frequently seemed to find themselves in a position where they were defending or protecting their staff. Consequently, in this study it was demonstrated that if any strong indication of support for e-learning and a standard VLE platform had been expressed by the senior executives, it is likely that it would have been dissipated through these managers' actions as they encouraged individual faculty members to retain their high teaching loads.

For these reasons it is suggested that the model's assertion that centralized organizations are less innovative than those that are decentralized because power is concentrated on relatively few individuals (Rogers 2003) may be moderated by the experience of this case. At times a clear authority decision on innovation adoption at the level of the organization is needed in order to prevent unhelpful disagreement between the different departments of the decentralized organization that threatened to delay or even derail continued innovation. This suggests that the definition of an organization in the model underestimates the potential of the decentralized and sometimes dysfunctional nature of universities to inhibit innovation diffusion.

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